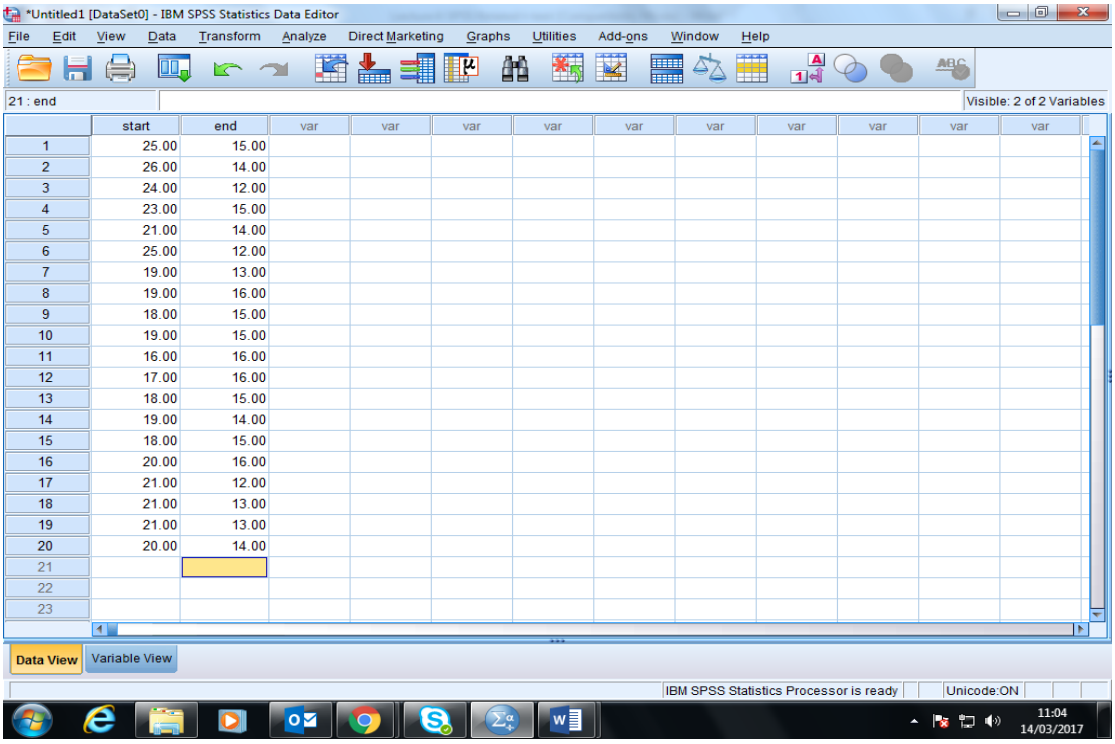
The related t-test on SPSS

For this test, we will return to the data file you set up last week comparing problem behaviours in a group of children before and after a therapy intervention. The original data table is reproduced below. Open up this file if you have already saved it, otherwise, you will need to set it up again using the table presented in the PowerPoint slides:

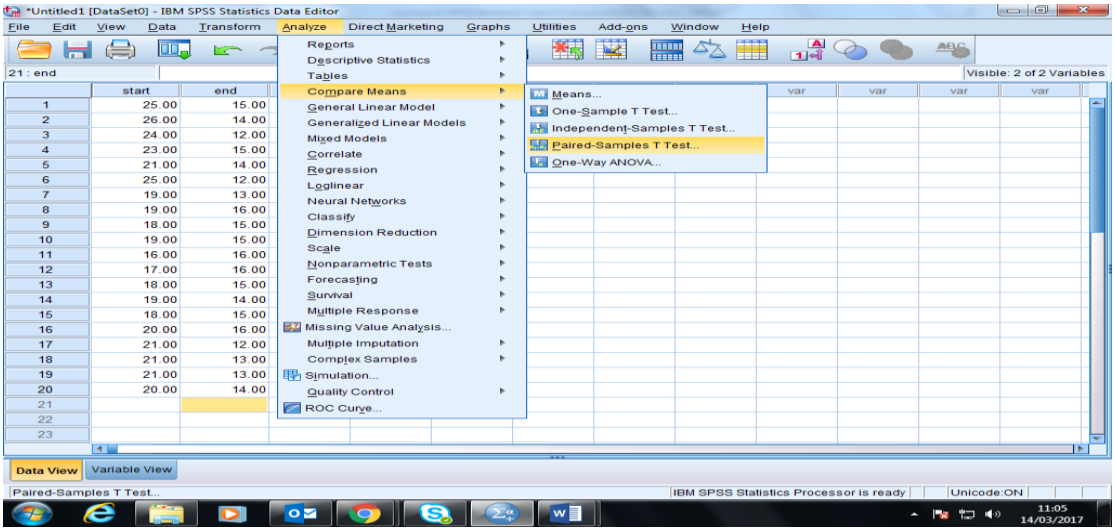
In SPSS, the data file will look as follows:



	start	end
1	25.00	15.00
2	26.00	14.00
3	24.00	12.00
4	23.00	15.00
5	21.00	14.00
6	25.00	12.00
7	19.00	13.00
8	19.00	16.00
9	18.00	15.00
10	19.00	15.00
11	16.00	16.00
12	17.00	16.00
13	18.00	15.00
14	19.00	14.00
15	18.00	15.00
16	20.00	16.00
17	21.00	12.00
18	21.00	13.00
19	21.00	13.00
20	20.00	14.00
21		
22		
23		

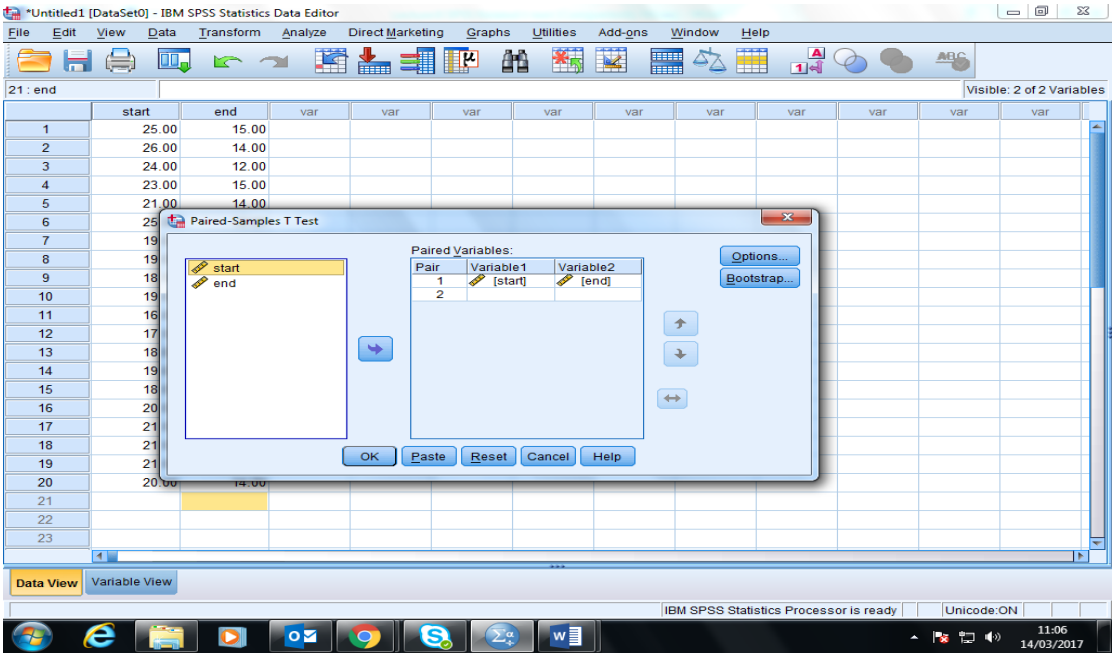
To do the related t-test:
In SPSS, the related t-test is called a **paired-samples t-test.**

1. Go the the **Analyse** menu, and from this select **Compare Means.** From the sub-menu select **Paired-Samples T Test:**



This will give the following dialogue box:

We are comparing the 'Start' and 'End' of therapy scores. From the list of variables in the left hand box, select 'Start' and use the arrow button (or 'drag and drop') to move this variable name into the *Variable 1* box in the **Paired Variables** box:
Following this, select 'End' and move this to *Variable2*:



3. Click the **OK** button and SPSS will perform the analysis for you. The first table in the output will look as follows:

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	start	20.5000	20	2.81911	.63037
	end	14.2500	20	1.37171	.30672

This table allows you to inspect the mean scores for each condition. From this table, it can be seen that end of therapy (mean = 14.2) scores are indeed lower than those at the start of therapy (mean=20.5), indicating a decline in the incidence of problem behaviours.

After this table is a table displaying the correlation between the two variables - you can ignore this. This is followed by the actual results of the t-test. The results of the t-test are displayed in the right hand section of the table (you will probably have to scroll across to see this):

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	start - end	6.25000	3.72580	.83311	4.50627	7.99373	7.502	19	.000

Note the t-value (7.50), its degrees of freedom (19), and the significance value - the probability of obtaining this result by chance alone – which is .000. For your result to be significant, the significance value should be less than or equal to .05. Also note that by default, SPSS supplies us with a 2-tailed value, but the research hypothesis of this example experiment was 1-tailed. (**In order to make your probability 1-tailed, divide the sig. value provided by SPSS by 2)**. As this value is less than .05, we can conclude that the difference between start and end of therapy scores was statistically significant.

Reporting the t-test results

Indicate the t value (round to 2 decimal places, ignore sign), degrees of freedom and whether or not your sig. Value was less than the significance level employed (in this case .05). To report the above example:

A related t-test indicated that the difference in problem behaviours between the start and end of therapy was statistically significant (t(19)=7.50, p=.000, one-tailed).